

CLAIM AMENDMENTS

1-21. (Canceled)

22. (Currently Amended) A method, comprising:

a) providing:

i) a plurality of reaction vessels having a top and a bottom configured with an aspect ratio of at least 3.3, wherein said ratio is defined as vessel height divided by vessel diameter,

ii) a heat source contacting said bottom of said reaction vessels;

iii) a cooling means contacting said top of said reaction vessels; ~~wherein said cooling means is selected from the group consisting of a water bath and a refrigeration device; and,~~

iv) a solution comprising a plurality of reactants;

b) introducing said solution into ~~said~~ a first reaction vessel comprising a first temperature differential between said top and said bottom; and,

c) transferring said solution from said first reaction vessel to a second reaction vessel wherein said second reaction vessel comprises a second temperature differential between said top and said bottom; and;

d) transferring said solution from said second reaction vessel to said first reaction vessel creating at least one convection cell comprising a temperature differential by applying heat to said bottom of said vessel with said heat source and cooling said top of said vessel with said cooling means under such conditions that said plurality of reactants are thermocycled within said solution, thereby form[ing] a reactant product.

23. (Currently Amended) The ~~reaction vessel~~ method of Claim 22, wherein, in cross section, the said reaction vessels ~~[[is]]~~ are without corners.

24. (Currently Amended) The ~~reaction vessel~~ method of Claim 22, wherein, in cross section, the said reaction vessels [[is]] are with corners.

25. (Original) The method of Claim 22, wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

26. (Canceled)

27. (Currently Amended) The method of Claim 22, wherein said reactant product[[s]] comprise amplified nucleic acid.

28. (Currently Amended) The method of Claim 22, wherein said reaction vessels comprise[[s]] material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

29. (Original) The method of Claim 22, wherein said reaction vessel is part of an array.

30. (Currently Amended) The method of Claim 22, wherein said first temperature differential of at least 10°C is established within said convection cell.

31. (Currently Amended) The method of Claim 22, further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessels.

32. (Currently Amended) A method, comprising:

a) providing:

- i) a plurality of reaction vessels comprising a top and a bottom;
- ii) a heat source contacting said bottom of said reaction vessels;
- iii) an active cooling means contacting said top of said reaction vessels,
~~wherein said cooling means is selected from the group consisting of a~~
~~water bath and a refrigeration device; and~~
- iv) a solution comprising a plurality of nucleic acids comprising a target
and a primer substantially homologous to at least a portion of said target;

b) introducing said solution into said a first reaction vessel comprising a first
temperature differential between said top and said bottom; and,

c) transferring said solution from said first reaction vessel to a second reaction
vessel wherein said second reaction vessel comprises a second temperature
differential between said top and said bottom; and

d) ~~thermocycling~~ transferring said solution from said second reaction vessel to
said first reaction vessel ~~by applying heat to said bottom of said vessel with said~~
~~heat source and cooling said top of said vessel with said cooling means under~~
such conditions that said nucleic acids form an amplified nucleic acid.

33 [[35]]. (Currently Amended) The method of Claim [[33]] 32, wherein said reaction vessels comprise[s] at least one material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

34 [[36]]. (Currently Amended) The method of Claim 32, wherein said reaction vessels [[is]] are part of an array.

35 [[37]]. (Currently Amended) The method of Claim 32, wherein a temperature differential of at least 5°C is established between said top surface and said bottom surface.

36 [[38]]. (Currently Amended) The method of Claim 32, also providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.

~~39-46~~ 37-44. (Canceled)

45 [[47]]. (Currently Amended) A method, comprising:

a) providing:

- i) a plurality of reaction vessels comprising a top and a bottom;
- ii) a heat source contacting said bottom of said reaction vessel, and
- iii) a solution comprising a plurality of reactants;

b) introducing said solution into ~~said~~ a first reaction vessel comprising a first temperature differential between said top and said bottom; and;

c) transferring said solution from said first reaction vessel to a second reaction vessel wherein said second reaction vessel comprises a second temperature differential between said top and said bottom; and,

d) transferring said solution from said second reaction vessel to said first reaction vessel creating at least one convection cell comprising a temperature differential by applying heat to said bottom of said vessel with said heat source under conditions such that said reactants are thermocycled, thereby form[[ing]] a reactant product.

46 [[48]]. (Currently Amended) The method of Claim 45 [[47]], wherein said reactants comprise i) nucleic acid comprising a target and ii) primers substantially homologous to at least a portion of said target.

47 [[49]]. (Currently Amended) The method of Claim 45 [[47]], wherein said reactant product[[s]] comprises amplified nucleic acid.

48 [[50]]. (Currently Amended) The method of Claim 45 [[47]], wherein said reaction vessels comprise[[s]] material selected from the group consisting of Plexiglas™, glass, plastics, silicones and metal.

49 [[51]]. (Currently Amended) The method of Claim 45 [[48]], wherein said reaction vessels [[is]] are part of an array.

50 [[52]]. (Currently Amended) The method of Claim 47 [[49]], wherein said second temperature differential is at least 5°C.

51 [[53]]. (Currently Amended) The method of Claim 47 [[49]], wherein said first temperature differential is at least 10°C.

52 [[54]]. (Previously Presented) The method of Claim 47 [[49]], further providing at least one microdroplet channel wherein said microdroplet channel is in fluid communication with said reaction vessel.